



10 CFR 50.73

**BOSTON EDISON**

Pilgrim Nuclear Power Station  
Rocky Hill Road  
Plymouth, Massachusetts 02360

July 17, 1992  
BECO Ltr. 92-078

**Roy A. Anderson**  
Senior Vice President - Nuclear

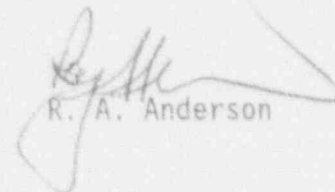
U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

Docket No. 50-293  
License No. DPR-35

Dear Sir:

The enclosed Licensee Event Report (LER) 92-007-00, "Reactor Core Isolation Cooling System Made Inoperable Per Technical Specifications Due to Loose Temperature Switch Terminal," is submitted in accordance with 10 CFR Part 50.73.

Please do not hesitate to contact me if there are any questions regarding this report.



R. A. Anderson

DWE/bal

Enclosure: LER 92-007-00

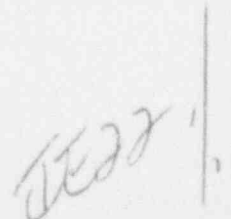
cc: Mr. Thomas T. Martin  
Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
475 Allendale Rd.  
King of Prussia, PA 19406

Sr. NRC Resident Inspector - Pilgrim Station

Standard BEC/LER Distribution

230081

9207240022 920717  
PDR /ADOCK 05000293  
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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20540 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1) Pilgrim Nuclear Power Station		DOCKET NUMBER (2) 05000293	PAGE (3) 1 OF 05
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TITLE (4) Reactor Core Isolation Cooling System Made Inoperable Per Technical Specifications Due to Loose Temperature Switch Terminal

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME(S)	DOCKET NUMBER(S)
06	18	92	92	007	00	07	17	92	N/A	050000
06	18	92	92	007	00	07	17	92	N/A	050000

OPERATING MODE (9) N

POWER LEVEL (10) 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5 (Check one or more of the following) (11):

20.402(b)	20.405(c)	50.73(a)(2)(v)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v) D	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(iii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iv)	50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Douglas W. Ellis - Senior Compliance Engineer	508 747-8160

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13):

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRCDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRCDS
B	BIN	WIK	WILLI	7/2	Y				

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 1,400 single-spaced, typewritten lines) (16)

On June 18, 1992 at 1900 hours, a seven day Technical Specification 3.5.D.2 Limiting Condition for Operation (LCO) was entered because the Reactor Core Isolation Cooling (RCIC) System was removed from service and made inoperable to repair an area temperature switch terminal block termination point that became loose during a quarterly functional test.

The cause of the loose terminal was repeated torquing of the terminal screw during temperature switch calibrations. The terminal was replaced with an installed spare from the same terminal block (Weidmuller type SAK6N). Following the replacement of the loose terminal, the Channel "A" portion of the circuitry was functionally tested with satisfactory results. The RCIC System was declared operable and the seven day LCO was terminated on June 19, 1992 at 0200 hours. The High Pressure Coolant Injection System was operable during the period the RCIC System was inoperable. Corrective action planned to preclude recurrence includes changing the circuitry to make it more suitable for frequent calibration.

This event occurred during power operation while at 100 percent reactor power. The reactor mode selector switch was in the RUN position. The Reactor Vessel (RV) pressure was 1025 psig with the RV water temperature at 548 degrees Fahrenheit. This report is submitted in accordance with 10 CFR 50.73(a)(2)(v)(D) and this event posed no threat to the public health and safety.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)  Pilgrim Nuclear Power Station	DOCKET NUMBER (2)  0   5   0   0   0   2   9   3	LER NUMBER (6)			PAGE (3)	
		YEAR 9   2	SEQUENTIAL NUMBER -   0   0   7	REVISION NUMBER -   0   0	OF 0   2	OF 0   5

TEXT (If more space is required, use additional NRC Form 306A's) (17)

Background

The Reactor Core Isolation Cooling (RCIC) System valve station area has four area temperature switches. The temperature switches provide a RCIC turbine steam supply pipe break detection function. The temperature switches are designed to cause the automatic closure of the RCIC turbine steam supply isolation valves MO-1301-16 and -17 if a valve station area high temperature condition occurs. The logic circuitry is arranged in two channels with two temperature switches in each channel. Channel 'A' is comprised of temperature switches TS-1360-14C and -16C and Channel 'B' is comprised of TS-1360-14D and -16D. The switches in each channel are connected in series, via electrical connections, such that one inoperable temperature switch makes the channel inoperable.

EVENT DESCRIPTION

On June 18, 1992 at 1900 hours, a seven day Technical Specification 3.5.D.2 Limiting Condition for Operation (LCO) was entered because the RCIC System was removed from service and made inoperable to repair a loose terminal block termination point (terminal) for area temperature switch TS-1360-16C. The terminal became loose during the performance of Procedure 8.M.2-2.6.3 (Rev. 18) Attachment I, "RCIC Steam Line High Temperature Instrument Functional Test". The functional test commenced on June 18, 1992 at approximately 1600 hours.

The functional test of a temperature switch consists of jumpering the in-series temperature switch (e.g., TS-1360-16C), applying heat to the other temperature switch (e.g., TS-1360-14C), verifying the normally de-energized trip relay is energized, removing the jumper and heat source, and verifying the trip relay is de-energized. The functional test of the other temperature switch is similar. The functional test of TS-1360-14C and -16C was completed satisfactorily with no discrepancies. The cover of junction box J599, removed for the functional testing of TS-1360-14C and -16C, was being reinstalled. One of the leads for TS-1360-16C became disconnected from the termination point when the cover was being reinstalled. The loose termination point for TS-1360-16C made the RCIC valve station area high temperature instrument Channel 'A' inoperable. Technical Specification Table 3.2.B Note 2 requires the closing of the RCIC System isolation valves with less than the minimum number of area temperature instrument channels. This action was previously accomplished by the closing of the RCIC turbine steam supply line isolation valves at step [17].

Problem Report 92.9090 was written to document this event. The NRC Operations Center was notified in accordance with 10 CFR 50.72 on June 18, 1992 at 1955 hours. The High Pressure Coolant Injection (HPCI) System was verified operable in accordance with Technical Specification 3.5.D.2.

This event occurred during power operation while at 100 percent reactor power with the reactor mode selector switch in the RUN position. The Reactor Vessel (RV) pressure was 1025 psig with the RV water temperature at 548 degrees Fahrenheit.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 60.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)  Pilgrim Nuclear Power Station	DOCKET NUMBER (2)  0 15 0 0 0 2 9 3	LER NUMBER (8)			PAGE (3)	
		YEAR 9 2	SEQUENTIAL NUMBER - 0 1 0 7	REVISION NUMBER - 0 1 0	0 3	OF 0 5

TEXT (If more space is required, use additional NRC Form 366A's) (17)

CAUSE

The cause of the loose terminal was previous, repeated torquing of the terminal screw as part of routine surveillance testing. The area temperature switches are calibrated each quarter. The calibration process involves removing the installed temperature switch and installing a calibrated spare temperature switch. The terminal block (Weidmuller type SAK6N) was installed in 1985. The torquing of the screw during the quarterly calibrations weakened the terminal.

Previous investigation determined the torquing requirements of 5 to 7 inch pounds specified in Procedure 8.M.2-2.6.3 Attachment 2 is consistent with the manufacturer's recommendation. Therefore, overtorquing during the calibrations was eliminated as a cause of the loose terminal.

The jumpering of TS-1360-14C or -16C consists of touching the ends of an insulated wire to the respective termination point screws while heat is applied to the applicable temperature switch. The jumpering does not involve the loosening or torquing of the screws. Therefore, jumpering during functional testing was not a cause of the loose terminal.

The application of heat to TS-1360-14C or -16C involves only slight movement of the temperature switch in its holder. The movement does not cause the temperature switch leads to exert a force on a terminal. Therefore, the slight movement of the temperature switch for the application of heat during functional testing was not a cause of the loose terminal.

CORRECTIVE ACTION

The loose terminal for TS-1360-16C was replaced with an installed spare from the same terminal block. The loose terminal was inserted into the spare's location. Following the replacement, the Channel 'A' portion of the circuitry for TS-1360-14C and -16C was functionally tested in accordance with Procedure 8.M.2-2.6.3 Attachment 1 with satisfactory results. The RCIC System was declared operable and the seven day LCO was terminated on June 19, 1992 at 0200 hours. A Maintenance Request (MR 19201895) was written on June 18, 1992 to replace the loose terminal at a later date. The loose terminal was replaced with a new terminal and MR 19201895 was closed on July 10, 1992.

Corrective action to preclude recurrence is part of the Long Term Plan (LTP 224). The plan includes changing the circuitry to make it more suitable for frequent calibration. The change includes the replacement of applicable terminal blocks and/or the installation of electrical connectors that do not require the loosening or torquing of terminal block screws for safety-related temperature switch calibrations. Currently, the changes are planned to be implemented during the next scheduled calibration of the temperature switches or during planned maintenance. The changes are expected to be completed by September 1992.



LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
			0   0   7	0   0	0   4	OF 0   5

TEXT (If more space is required, use additional NRC Form 386A's) (17)

SAFETY CONSEQUENCES

This event posed no threat to the public health and safety.

The RCIC System and the area temperature switches were operable prior to performance of the functional test. The RCIC System area temperature switches were recently calibrated and functionally tested in accordance with Procedure 8.M.2-2.6.3 (Rev. 18) Attachment 2. The calibration and functional test of TS-1360-14C and -16C was completed with satisfactory results. The terminal for TS-1360-16C that became loose during the June 18, 1992 functional test would impact the operability of the RCIC Channel 'A' valve station area temperature circuit only. The Channel 'B' circuit, including redundant area temperature switches TS-1360-14D and -16D is capable of providing the same temperature detection function if the loose terminal for TS-1360-16C had not been noticed when the junction box cover was being reinstalled.

The HPCI System was operable during the period the RCIC System was inoperable.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(v)(D) because the RCIC System was made inoperable.

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station Licensee Event Reports (LERs) submitted since January 1984. The review focused on LERs involving terminal failures. The review identified similar problems with terminals reported in LERs 50-293/89-019-00 and 91-004-00.

For LER 89-019-00, the RCIC System was made inoperable during power operation on June 9, 1989 at 0500 hours in accordance with Technical Specification Table 3.2.B. This was due to the discovery of a lifted lead during a functional test of the RCIC System area temperature switches. The lifted lead for temperature switch TS-1360-14D would have prevented the Channel 'B' valve station area temperature switches from providing the pipe break detection function. The lead was lifted because the terminal (Weidmuller type SAK6N) was accidentally broken during the May 14, 1989 temperature switch calibration. The procedure (8.M.2-2.6.3) was signed off as completed without the lifted lead being noted in the procedure. Corrective actions included the following: the terminal was replaced; the responsible I&C Supervisor received specific training regarding lifted leads and jumpers; other I&C and Electrical Maintenance personnel received similar training; and approximately 379 other completed surveillance test procedures were reviewed for discrepancies which could affect operability of the tested system. This review identified no discrepancies affecting the operability of the tested system.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

For LER 91-004-00, the RCIC System was made inoperable during power operation on March 19, 1991 at 2345 hours in accordance with Technical Specification Table 3.2.B. The system was made inoperable due to a terminal stripped during the performance of Procedure 8.M.2-2.6.3 (Rev. 18) Attachment 2. The terminal was stripped as the installed temperature switch (TS-1360-14C) was being replaced with a previously calibrated temperature switch. The cause of the stripped terminal was repeated torquing. The repeated torquing during the quarterly calibrations weakened the terminal (Weidmuller type SAK6N). The stripped terminal for TS-1360-14C was replaced with an installed spare. The stripped terminal was inserted into the spare terminal's location and a Maintenance Request (MR 19101961) was written to replace the stripped terminal. Following the March 19, 1991 replacement of the terminal, the Channel 'A' circuitry was tested in accordance with Procedure 8.M.2-2.5.3 Attachment 2 with satisfactory results. The RCIC System was declared operable and the seven day LCO was terminated on March 20, 1991 at 0450 hours. The stripped terminal was replaced with a new terminal and MR 19101961 was closed on September 11, 1991.

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report are as follows:

COMPONENTS

Block  
Switch, Temperature

CODES

BLK  
TS

SYSTEMS

Leak Monitoring System  
Reactor Core Isolation Cooling (RCIC) System  
Temperature Monitoring System

IJ  
BN  
IM